SEA TURTLES IN VIRGINIA

General Description

Sea turtles are large marine reptiles found in subtropical, tropical, and temperate oceans as well as subartic seas. As fully mature animals, they can weigh anywhere from 75 to 2000 lbs. Sea turtles spend the majority of their time traveling in the ocean. In addition, coastal waters offer prime foraging opportunities and access to suitable nesting habitat. The strong bond to the marine environment makes sea turtles difficult to observe and study. Basic life history questions such as how long they live and what age they reach sexual maturity still remain unanswered despite continual advances in sea turtle research.

Sea Turtles in Virginia

Virginia's inshore and nearshore waters host a large number of sea turtles from May to November. The lower Chesapeake Bay estuary and the Atlantic Coastline provide important developmental habitat for immature sea turtles because of submergent vegetation beds and a rich diversity of bottom-dwelling fauna that afford cover and forage. Occasionally, adult females use Virginia's ocean facing beaches as nesting sites.

Five of the seven species of sea turtles existing in the world today occur in Virginia's coastal waters and all are on the endangered species list. They are loggerheads, green turtles, Kemp's ridleys, leatherbacks, and an infrequent hawksbill. The loggerhead, which occasionally nests on our beaches from early June through August, is the most commonly seen sea turtle in the Commonwealth. Virginia is considered the northern limit of the loggerhead's nesting range in the US and has had as many as eight nests reported in a single nesting season. (seeTable 1 for average number of nests in states to the south). Majority of nesting effort has been recorded along Virginia's mainland oceanfront from False Cape State Park to Fort Story. A FEW crawls (tracks left behind by females that have come ashore to nest) have been found on some of the remote barrier islands along the seaward margin of the Delmarva Peninsula, but these are very rare occurrences.

Although loggerheads are currently listed as a threatened species throughout their global range, females that nest in Virginia belong to a genetically distinct nesting assemblage known as the Northern Nesting Subpopulation (NNS), whose range extends from Virginia/North Carolina to approximately Cape Canaveral, Florida (TEWG 1998). Because the NNS is a genetically separate subpopulation, regional dispersal of loggerheads is not sufficient to replenish the nesting assemblage should it be extirpated. At this point it is not clear whether NNS is declining or holding stable. Either way, many researchers are concerned that the current average of 6,200 nests per year has not increased noticeably since the late 1980's and it appears unlikely that the NNS's recovery goal of 12,800 nests will be achieved in the foreseeable future (TEWG 1998).

Loggerhead Nesting Behavior

Approximately every two to three years, a female loggerhead returns to her nesting beach to lay eggs. She emerges from the ocean at night and crawls across the beach to a suitable nest site near or at the base of a primary dune. Using her rear flippers, she digs an 18-24 inch deep nest cavity shaped like an upside down light bulb and deposits an average of 120 golf-ball size eggs. When she is finished laying, the female carefully covers the nest with sand and slowly returns to

the water leaving the eggs to face a number of natural and human-induced dangers without further protection. The female will lay a clutch of eggs every two weeks during a single nesting season.

Following an incubation period of approximately 63 days, hatchlings emerge from the nest cavity under the cover of darkness. They scamper across the beach towards the ocean. Upon entering the water, the hatchlings swim nonstop until they reach a major oceanic current such as the Gulf Stream located off the Virginia coast. Once entrained in oceanic currents, they drift passively amid large rafts of floating vegetation for as long as ten years. Loggerheads eventually leave this pelagic existence and return to warm shallow coastal waters where they continue to develop into adult turtles.

Threats Facing Sea Turtles

Sea turtles face many natural hazards. It is estimated that only 1 out of every 5,000 eggs develops into an adult animal. Sea turtle nests are vulnerable to predators such as raccoons, foxes, and ghost crabs. Additional threats to nests include high winds and severe storms, which cause extensive beach erosion.

Many human activities have placed additional stress on sea turtle populations worldwide. Sea turtles and eggs have long been harvested for human consumption and their shells used to craft tortoise-shell jewelry and other types of ornamentation. While these practices continue today in some parts of the world, strong international regulations have greatly reduced such direct exploitation of sea turtles. However, many indirect threats to sea turtle survival still exist including entanglement in fishing gear, ingestion of marine debris, collisions with boats, and increasing beachfront development, which reduces the availability of suitable nesting habitat.

Every year, between 200 and 300 dead sea turtles wash ashore or strand on Virginia's ocean-facing and inshore shorelines (Mansfield et al. 2001). Typically, the majority of strandings occur during the latter part of May through June. In 2001, 395 sea turtle strandings were confirmed and recorded by the Virginia Sea Turtle Stranding and Salvage Network (VSTSSN), which is administered by the Virginia Institute of Marine Science Sea Turtle Program. This total represents the highest annual number of reported strandings in VSTSSN's 23-year history. Ninety-one percent of these strandings occurred between May and September, with 55% of the year's total observed during the month of June alone. The cause of death for the majority of strandings in Virginia remain unknown, although every year a number of animals are found with injuries indicative of boat strikes. Additionally, several turtles strand each year with ingested fishing hooks and/or with some type of fishing gear trailing from the animal.

Sea Turtle Conservation in Virginia

There are a number of public agencies that are involved with sea turtle conservation efforts in our state. Back Bay National Wildlife Refuge located near Virginia Beach runs the only active nest monitoring program in the state, which covers the beaches that extend from the NC/VA t o Fort Story (Carol – I am sending you a copy of one of the Refuge's annual sea turtle reports). Virginia Institute of Marine Sciences (VIMS) administers and oversees the VSTSSN and as such serves as the repository for the state's stranding data. VIMS staff and students respond to strandings on the lower peninsula (Hampton Roads, Newport News, and Pocoson) and the western shore of Chesapeake Bay. VIMS has also done most of the research on sea turtles in

Virginia and continues to engage in a variety of scientific studies (e.g., monitoring the distribution of turtles in state waters, examining local foraging ecology, following movement patterns of adults and juveniles live captured in VA, examining impacts of state fisheries on turtles, etc. – please contact Kate and Erin about this stuff). The Virginia Marine Science Museum (VMSM) is a major cooperator for the VSTSSN and responds to strandings reported in the Virginia Beach, Norfolk, Portsmouth area as well as on the Eastern Shore. VMSM's Stranding Center also involved in the rehabilitation/disposition of virtually all live-stranded animals recovered in Virginia (please call Mark Swingle and Sue Barco for more info.). Virginia Marine Resources Commission's (VMRC) Marine Patrol also plays a major role in the VSTSSN. Sea turtles often strand in remote areas that are only accessible by boat. Marine Patrol will often provide stranding network members boat transportation to these areas so they can work up the animals. VMRC is also involved to some degree with developing and implementing fishery policies that minimize impacts state commercial fisheries may have on sea turtles (please call Rob O'Reilly, VMRC's Deputy Chief of Fisheries Management 1-800-541-4646 for more info.). DGIF's current role is to increase general awareness of sea turtles, respond to as many strandings as time will allow on the Eastern Shore, and assist with mass stranding events anywhere in the state. This year, DGIF will also help with stranding training workshops and also hold a nesting workshop at Chincoteague NWR.

Finally, sea turtle conservation efforts in Virginia would not be possible without the help of numerous volunteers that gather stranding data, educate people about sea turtles, and generate public support for these fascinating animals. All actions taken to further the recovery of sea turtles are in strict compliance with the Endangered Species Act and may only be carried out by those agencies and volunteers that are operating under an Endangered Species Permit.

How You Can Help

If you fortunate enough to encounter a nesting female or a nest that is hatching, do not crowd or disturb the turtle(s), do not shine lights or snap flash photos, and turn off all lights in the immediate area including inside lights. Sit quietly away from the nesting female or hatching nest. Your eyes will quickly adjust to the darkness and allow you to enjoy the experience without harassing the animals. Please report sighting of nesting females or hatchlings found between NC/VA border and Fort Story to Back Bay NWR (757-721-2412). Sightings elsewhere in the state should be reported to Dept. of Game and Inland Fisheries (757-442-2429).

Strandings represent the only index of sea turtle mortality available to biologists, therefore it is important that they get reported. If you encounter a dead sea turtle or a live, debilitated turtle please call one of the following numbers:

> For strandings found on Virginia's Eastern Shore (seaside or Bayside) please call Dept. of Game and Inland Fisheries at 757-442-2429. If no one is available, call Virginia Marine Science Museum at 757-437-6159.
>
> For strandings in the vicinity of Virginia Beach, Norfolk, Portsmouth, please call Virginia Marine Science Museum at 757-437-6159.
>
> For strandings on the lower peninsula (Hampton Roads, Newport News, and Pocoson) and north along the western shore of Chesapeake Bay, please call Virginia Institute Sea Turtle Stranding Program at 804-684-7313.

Because sea turtles are protected under the Endangered Species Act, it is unlawful to harass, harm, capture, or collect sea turtle eggs and live or dead hatchlings, juveniles, and adults. Violators can be prosecuted under civil and criminal laws and assessed heavy penalties.

Literature Cited

Turtle Expert Working Group. 1998. An Assessment of the Kemp's Ridley *(Lepidochelys kempii)* and Loggerhead *(Caretta caretta)* Sea Turtle Populations in the Western North Atlantic. NOAA Technical Memorandum NMFS-SEFSC-409.

Mansfield, K.L., J.A. Musick and R.A. Pemberton. 2001. Characterization of the Chesapeake Bay pound net and whelk pot fisheries and their potential interaction with marine sea turtle species. Final report to National Marine Fisheries Service Contract No.: 43EANFO30131. Virginia Institute of Marine Sciences, Gloucester Point, VA. 76pp.

Table 1. Average number of loggerhead nests laid annually in the Southeastern United States from 1989 – 1995 (TWEG 1998).

State	Average Number of Nests
NE Florida (GA/FL border to Cape Canaveral*	1,024
South Florida**	63,939
Florida Panhandle***	455
Georgia	988
South Carolina	3,484
North Carolina	729

* NE Florida is part of the genetically distinct northern nesting subpopulation that also includes GA., SC., NC, and VA. The status of this population remains unclear.
** South Florida population is another genetically distinct US nesting subpopulation that is increasing.
***Florida Panhandle is a third genetically distinct US nesting subpopulation that is also increasing.

MISCELLANEOUS STUFF

Sea Turtle Stranding Response Measures

- Record GPS coordinates at the stranding location.
- Conduct a complete external examination of the carcass, including the inside of the mouth, to look for injuries, deformities, attached or ingested fishing gear, tumors, growths, skin lesions, sores and any other abnormalities that may indicate cause of death. Stranded animals should also be checked for the presence of flipper tags (metal cattle ear tags that are used to mark live sea turtles; they are applied on the trailing edge of one or more flippers) and tag scars (torn tissue on the trailing edge of a flipper where a lost tag was applied). Photos are taken of animals for which species is unknown or if any external anomalies are present.

- Scan all four flippers for PIT (Passive Integrated Transponders) tags. These internal tags are passive microcomputer chips that are typically injected into one the front flippers. If a PIT tag is present, a unique series of numbers and letters will be read by a PIT tag scanner. PIT tags are far more expensive than external flipper tags, but there is little to no tag loss associated with them.
- Take length and width measurements of the carapace with a measuring tape for over the curve measurements and/or with a pair of large tree calipers for straight measurements.
- Necropsy fresh to moderately decomposed carcasses to (1) ascertain sex (immature turtles are not sexually dimorphic); (2) record food items in the GI tract; (3) look for ingested fishing gear (e.g., hooks and fishing line), plastic products and other marine debris; (4) check for the presence of internal parasites in the GI tract and other organs; (5) check all organs for sores, lesions and other anomalies; and (6) assess the physical condition of the animal. Take photos of any internal anomalies.
- Collect biological samples as requested by researchers or the National Sea Turtle Stranding Coordinator. Most frequently collected samples include muscle tissue for DNA analyses, humeri (front flipper bones that form half of the shoulder joint) for aging studies, gut contents, samples of internal parasites, and tissue with lesions, sores or other anomalies. All samples get turned over to VIMS or VMSM.
- Salvage all attached or ingested fishing gear/marine debris and turn items over to VIMS or VMSM.
- Fill out a Sea Turtle Stranding and Salvage Network Report for each stranding and send it to VMSM or VIMS.
- When finished with the examination and report, mark the entire carcass with brightly colored spray paint to avoid double reporting, move the carcass as far above the high tide line as possible to avoid having it wash out with the tide, and bury the painted carcass above the high tide line, if possible.
- After attending to the stranding(s), report the event(s) to either VMSM or VIMS by telephone. All strandings must be called in within 24 hours of the event.

Definition of a True Stranding and an Incidental Capture

A true stranding is defined as a dead or live debilitated sea turtle found in the water or on a shoreline for which interactions with a lawfully conducted human activity such as commercial/recreational fishing or navigational channel dredging cannot be confirmed through direct observation. Incidental captures, on the other hand, represent observed sea turtle interactions with a lawfully conducted human activity (e.g., turtles observed caught in an actively fished gillnet or pound net, fresh turtle parts found in intake screens aboard hopper dredges, power plant entrainments, etc.).

Common prey items found in the GI tracts of loggerheads:

Horseshoe crab, spider crab, moon snail, channel and knobbed whelks, hermit crab, dolly varden crab (*Hepatus epheliticus)*, blue crab, lady crab (*Ovalipes ocellatus)*, speckled crab (*Arenaeus cribrarius)*. Also know to forage on sponges, sea urchins, tunicates, and discarded fish or

bycatch. I will send a chapter from a book that discusses the foraging ecology of the different species.